

# **Pacific Decadal Oscillation and the Impact on Precipitation**

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The Pacific Decadal Oscillation (PDO) is a shift in the temperature pattern of the North Pacific Ocean which occurs on a 20 to 30 year cycle. The PDO is in a warm or positive phase (cool or negative) when the northwest Pacific sea surface temperature (SST) anomalies are negative (positive) while SST anomalies in the eastern equatorial Pacific Ocean become positive (negative). The relationship between PDO phase and Arizona precipitation was investigated. Precipitation for each Arizona climate division (and the state as a whole) was compared against PDO phase for the calendar year, winter season, and monsoon season. The results indicated that the calendar year and winter season precipitation was significantly affected by PDO phase, with rainfall below normal in the cold phase and above normal in the warm phase. The winter season was affected the most with rainfall generally 15 to 20% below/above normal during cold/warm PDO phase, respectively. The monsoon season was surprisingly unaffected. The PDO phase affects ENSO precipitation. Extreme precipitation events are less likely in years when ENSO and PDO are out-of-phase (e.g. El Nino and cold phase PDO) and more likely when they are in-phase. PDO effects on precipitation in New Mexico and South Texas is similar and will be discussed.